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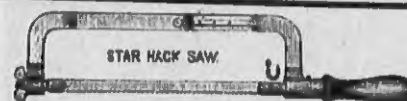
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# The United States Miller

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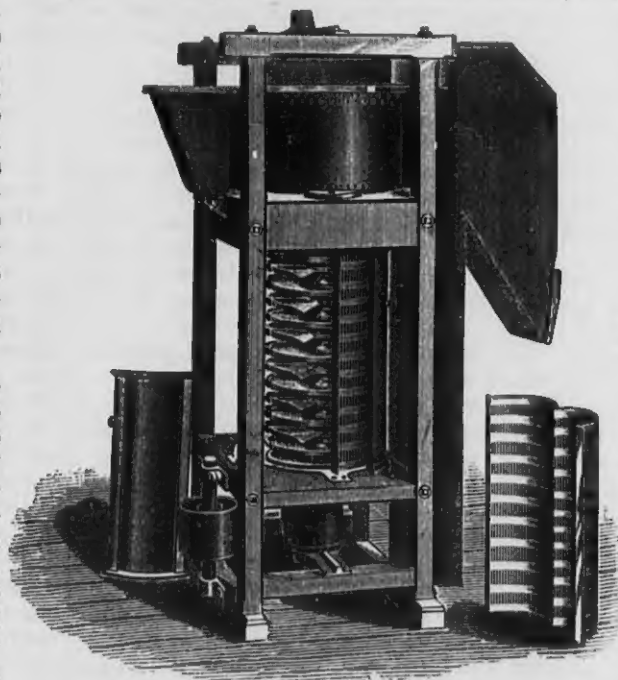
## YATES' MINNEAPOLIS GRAIN SCOURER, POLISHER AND SMUTTER.

It has become a trite saying to remark: "Millers, if you would have good flour you must first thoroughly clean your wheat." This advice, though old and often given, is good, and various machines, some good, some bad, some indifferent, have been and are being used to accomplish the object of grain cleaning. It has remained for Mr. Joseph Yates of Minneapolis, Minn., a miller and inventor of long experience and great ability, to invent and construct a machine on a new principle, which thoroughly and wastelessly scours, polishes and removes smut from grain. This machine has stood the test of usage in the best Minneapolis mills, as well as elsewhere, for a considerable length of time, and is pronounced by all who have seen it WITHOUT EQUAL, and being entirely satisfied as to its merits personally, Mr. Yates has now concluded to place the machine on the market, manufactured in three different sizes, so as to meet the requirements of millers, small or large. The accompanying illustration gives a good view of the machine.

The grain is operated upon in this machine by a series of corrugated disks arranged at intervals on a vertical shaft and radial blades beveled gradually from the rear to the front on their upper sides, and arranged on another vertical shaft so as to intervene or extend between and alternate with the disks. A reticulated jacket is arranged about the scouring devices, within the usual shell or incasement, which is preferably made of steel. The blades and disks are made to revolve at a differential velocity by pulleys of different size. A superposed suction fan draws an upward current of air through the openings along the outside of the perforated jacket and discharges it on one side of the incasement. By a simple device the blades and disks can be brought nearer together or farther apart, at the pleasure of the operator. The discharge-spout empties its grain into an air flue, which is open at the bottom and connects with the upper side of the fan, which thereby produces an updraft through the discharging grain after it has been scoured. At a certain point the flue defects so as to pass over the top of a pocket, so that the air will strike the opposite wall or casing, and impurities of any magnitude will be precipitated into the pocket. The pocket has a flap door which is hinged to close by gravity and the suction of

the fan. Through this whatever may accumulate in the pocket may be removed.

In practice the scourer is kept full, or nearly so, so that the grain will be laterally supported by the perforated jacket and surround the disks and blades. The blades turn less rapidly than the disks, and force the grain up and down against their roughened faces. The grain being thus caused to rub against one another and against the roughened disks, are very rapidly and very thoroughly scoured before they are discharged. The differential motion of the blades and disks contributes in no small degree to this result. The feed is



YATES' MINNEAPOLIS GRAIN SCOURER, POLISHER AND SMUTTER.

regulated by a slide or valve in the spout or usual hopper, while the discharge-spout is preferably valved so that the operator may control the rapidity of the flow of the grain through the scourer, and thus determine the degree of scouring to which each lot of grain shall be subjected.

Our readers will observe that this machine differs vastly in its principle for scouring grain from any other on the market. Mr. Yates says that any miller who operates any short system especially will find this machine indispensable. For further particulars, prices etc., our readers will address Mr. Joseph Yates, 702 Lumber Exchange, Minneapolis, Minn., or James Young, c/o 307, Broadway, Milwaukee, Wis.

## IMPORTANCE OF THE RAILROAD INTERESTS.

At the present hour there are more than 140,000 miles of main track in constant use in the United States. Their gross earnings this year will amount to about \$800,000,000. In the present calendar year they will carry 400,000,000 passengers and move at least 500,000,000 tons of freight. The entire capital stock and funded debt of the railroads of the country to-day, equal if they do not exceed \$7,750,000,000. This represents an amount which the human mind cannot adequately comprehend. It is far larger than the national debt of any of the great nations of the world. France's is \$1,500,000,000 less than this, while it is larger than the debt of Great Britain and Russia together, and more than seven times as great as the interest-bearing portion of the indebtedness of the United States. In 1880 the railroads composed over one-ninth of the aggregate wealth of the entire country. The value of the railroad interests to-day is undoubtedly one-eighth as great as that of all the property in the country, real and personal, combined.

The railroads form one of the mightiest agencies of modern civilization. To the railroads more than to any other one of the appliances devised by man can the stupendous advances in the material and moral development of the great nations of the world in the past half century be traced. Their ramifications extend through the whole social system of every civilized state. They touch society, and touch it vitally, at many points. Under their control are billions of dollars and millions of men. To direct any great division of

this vast and complicated organism wisely requires talents as conspicuous as any which the military commander or the actual ruler of any great nation is ever called upon to display.—*St. Louis Globe-Democrat*.

**A LOST OPPORTUNITY.**—*Omaha World:* Omaha Youth (reading)—Alfred Sully, the New York railroad king, has given his niece, just graduated at Carlisle, Pa., a check for \$50,000.

Omaha Girl—How mean!

"Mean?"

Yes, why didn't he give it to her before?"

"What good would it have done her while she was at school?"

Good! Just think what a lovely graduation dress \$50,000 would have bought."

## THE MACHINERY OF ELEVATORS.

The machinery of an elevator should not be too heavy. On an elevator consuming not over 50-horse power, no shaft in the building requires to be over 2½ inches in diameter. Heavy shafting is not required if proper speed is maintained. In large elevators the friction shaft should be fully as heavy as any other in the building, not so much for the purpose of resisting torsional strain as transverse strain, as the heavy head pulleys, together with their loads of grain, rest on that shaft, and where there are a number of them in one line the weight is very material. On all such shafts there should be a journal bearing on each side of each friction pulley.

Where it can be done the main line should be connected directly with engine shaft; but if that cannot be done then the engine and main shaft should be so set in relation to each other that a belt of reasonable length can be used. The main shaft ought to have a speed of about 150 revolutions in all cases, and can much exceed that in small houses. There are very few cases where country elevators need more than a 10x16 engine, which should make 165 revolutions at least. A good 12x20 engine will do the work of the largest country house, and should have a speed not less than 140 revolutions per minute. Good engines should always be selected. Everyone now admits that elevators discharge by centrifugal force and that the head pulley speed in revolutions should be about the same for all sizes. If it was not necessary to throw the material beyond the mouth of the down leg of the elevator, the speed would be uniform for all sizes of pulleys, but owing to that fact the smaller the pulley the greater the number of revolutions to get over and discharge properly. A 36-inch pulley discharges well at 38 revolutions handling corn and cobs, and will do very well at 40 revolutions with loose grain. A 60-inch pulley can be speeded lower to obtain equally good discharging results.

The laws governing centrifugal force are: First, the centrifugal force of a revolving body is as the square of its velocity; Second, the centrifugal force of revolving bodies of equal rotary velocities is as the diameter of the bodies; Third, the centrifugal forces of revolving bodies of varying sizes and velocities are to each other as the squares of their velocities multiplied by their diameters. If mechanics will study the laws they will be readily enabled to adapt them to practical uses so far as will be required. — R. James Abernathy in *Modern Miller*.

## HOW TO CARE FOR LEATHER BELTS.

From the French, *Annales Industrielles*.

A recent issue of *Annales Industrielles* says on this very important question: We have had occasion at various times to combat the widespread custom of employing resinous substances for augmenting the adhesion of leather belts to pulleys.

These substances for a short time produce the desired effect, but rapidly become inactive and deteriorate the belts. One must not forget that it is the more or less perfect contact between the belts and the pulleys which renders the adhesion more or less intense.

It has been suggested, perhaps with reason, that it is the pressure of the atmosphere

which renders the friction so considerable between a well-polished pulley and a belt of good quality and condition. According to this, we should seek to render the contact between the surface of the leather and the surface of the pulley as intimate as possible. This result is not obtained by means of rosin, but rather with a fatty substance, such as fish-oil, tallow, or better yet, with a mineral oil. A belt so treated glues itself, so to speak, to the polished surfaces.

For some time mineral oils have been substituted for the oil, and other substances above mentioned. We could not recommend the former too highly for the preservation of belts. It suffices for maintaining them in excellent condition, to oil them about every two months on the exterior face; they will then remain supple, and consequently easily take the form of the pulley. It is needless to add that this suppleness contributes essentially to their preservation, because cracks and ruptures are not produced as in belts dried by the action of the atmosphere.

The experiments of Morin have demonstrated that the co-efficient of friction of new belts on wooden pulleys .50; that of greasy belts on the same pulleys .47. The co-efficient of friction between humid belts and turned and polished cast-iron pulleys is .38; that of greasy belts on cast-iron pulleys .28. Belts heavily saturated with oil on the interior, and running on cast-iron pulleys, have a co-efficient of .12 only.

It is the humid belts which have the highest co-efficient of friction. Now the oiling of the external surface of the belt with a mineral oil maintains throughout the thickness of the same a species of humidity that is very advantageous. It is especially so in locations that are very dry or filled with dust, where the belts generally become dry in a short time, that this oiling is very useful.

The mineral oil may be applied while the belt is running, and ought to be employed every few weeks. For the best results a thorough cleaning of the belt should take place every three or four months.

For this purpose the belt is first removed from the pulleys, then washed with tepid water in order to remove the dust and other matters which are always deposited upon it. The belt is dried by rubbing it energetically with waste or a cloth, then the mineral oil is applied to it, likewise by means of a cloth, and it is hung in a warm place. After the first portion of the oil has penetrated the leather, more is applied.

The employment of mineral oils has up to the present given excellent results. A belt treated in the manner we have given above retains its suppleness for a long period, and resists the action of the atmosphere. Its running is noiseless and regular, the losses from passive resistances are much less, the belt has a much longer life, and the expenses of maintenance are by this same largely, and in fact we may say in most cases fully, compensated for.

## RECIPES.

CONCRETE UNDER WATER.—An ingenious method of laying concrete under water consists of first inclosing the beton or concrete in paper bags or other soluble envelopes, and then lodging the bags so filled in the desired position under water by sliding

them down a chute, or in such a manner that they will not be ruptured until after their contents shall be in place.

A SUBSTITUTE FOR FIRE CLAY.—When you have to repair your boiler furnace, and can't get any fire clay: Take common earth mixed with water, in which you have dissolved a little rock (or other) salt; use same as fire clay—the furnace will last fully as long.

REMOVAL OF WARTS.—A correspondent of the *Therapeutic Gazette* announces through its columns the virtues of castor oil in the removal of warts. Constantly applied for from two to four or six weeks each day—that is, once a day—it has not failed in my hands, says the writer, in any case of any size or long standing. The time it takes may try the patience of the user, but if faithfully used they will get their reward in the removal of the wart without leaving any scar. I have used it with some success in other growths, and had benefit enough to merit further trial. It might, he adds, be a success in the removal of certain kinds of cancer, especially scirrhus forms.

CEMENT FOR GLASS AND METAL.—Every one who uses brass letters on glass windows, and knows how often they tumble off from unequal expansion, or from the too energetic efforts of window-cleaners, will be glad to have the following recipe: Litharge, 2 parts; white lead, 1 part; boiled linseed oil, 3 parts; gum copal, 1 part. Mixed just before using, this is said to form a quick-drying and secure cement.

## THE LARGEST FARM IN THE WORLD.

In the southwest corner of Louisiana lies the largest producing farm in the world. It runs one hundred miles north and south, and is owned and operated by a syndicate of Northern capitalists. Their general manager gives an interesting account of this gigantic plantation, which throws the great Dairymple farm in Dakota into the shade.

"The 1,500,000 acres of our tract was purchased in 1893 from the State of Louisiana and the United States Government. At that time it was a vast grazing land for the few cattle dealers in the neighborhood. When I took possession I found over thirty thousand head of half-wild horses and cattle. My work was to divide this immense tract into convenient pastures, establishing stations or ranches every six miles. The fencing alone cost in the neighborhood of \$50,000. The land I found to be best adapted to rice, sugar, corn or cotton. All our cultivating, ditching, etc., is done by steam power. We take a tract, say half a mile wide for instance, and place an engine on each side. The engines are portable, and operate a cable attached to four plows, and under this arrangement we are able to plow thirty acres a day with only the labor of three men. Our harrowing, planting, and other cultivation is done in a like manner; in fact there is not a single draft-horse on the entire place. We have, of course, horses for the herders of cattle, of which we have sixteen thousand head. The Southern Pacific railroad runs for thirty-six miles through our farm. We have three steamboats operating on the waters of our own estate, upon which there are three hundred miles of navigable waters. We have an ice-house, a bank, a shipyard and a rice-mill.



## COMPOUND AND SPECIFIC.

A insures \$2,000 on mill building, machinery, engine, and saw-mill machinery.

B insures \$500 as follows: \$200 on mill building, \$200 on machinery, and \$100 on engine and boiler.

The loss is on building, \$1,175; on machinery, 1,150; on engine and boiler, 600; and on saw-mill machinery, \$300.

The adjustment has been made under the rule, as total insurance is to total loss, so is the full sum insured by A to the full sum to be paid by A on mill building.

Because B gets a salvage on this item, mill building, the assured is dissatisfied, and thinks he should be paid the full amount covered by B on said building. Can you give us a more equitable way in which to settle the above? Your prompt answer will greatly oblige. I might add that A's amount is used up in second item, machinery, and has nothing left to apply to engine and saw-mill machinery. B's \$100 is all that is paid on those items under engine and boiler.

A SUBSCRIBER.

## ANSWER.

Without going much into details, we remark that the courts hold that a man with a loss of \$2,934 and insurances of \$2,500, no matter how "compound and specific," provided the insurances apply to the property burned, must have all that the policies call for. There are numerous complicated rules for the adjustment of non-concurrent policies whose recital is a weariness to the flesh. When they apply so as to give the assured the largest possible indemnity the courts do not quarrel with them; but when they interfere with that chief end of insurance they are set aside, and a company is not permitted to make a salvage on an item on which there thus remains unpaid loss if the policy applies to it.

In the case presented a court would say that A had all the loss on "saw-mill machinery," and must pay that \$800; then it would say that B has all the loss on the "boiler," and must pay up to the amount applying thereto, \$100 (the separate amount of loss on boiler is not stated, but we will assume that it was \$100 in our supposititious adjustment), then A would have to pay the remaining loss on engine, \$500. This would leave A with \$1,200 unexhausted, and B with \$400 to apply to losses aggregating \$2,334 on mill building and machinery, and they would have to pay the \$1,600, and the owner would lose the balance, \$734.

This is, of course, a short cut to final results; and the court might not travel precisely by the route we have indicated, but it would come out at the same place, and would maintain the doctrine which it has so often laid down, that such methods of apportionment will be adopted as will secure the fullest indemnity to the insured.

Specifications in a policy save the company from undue loss. If there had been no loss whatever on "machinery" the \$200 insured thereon by B would have been equivalent to a separate policy thereon, and no portion of that particular amount could be called on. In such a case salvage would be entirely legitimate; but in our opinion the salvage got by B on "mill building," in the case as stated above, was not only bad law but bad practice. Adjusters and correspondents will be able to answer a great many of their own conundrums if they will remember the basal rule laid down

by the courts, that only such rules of apportionment as secure to the insured the fullest indemnity will stand the final test.—*Insurance Monitor*.

## A CORNER ON ELECTRIC LIGHT CARBONS.

For some months there has been an effort by certain parties to control the market in electric light carbons, and as we go to press the matter has assumed a new aspect. These carbons have for a long time been supplied chiefly by two firms in Pittsburg, three or four in Cleveland, two in St. Louis, and two or three in New England. Two months ago a combination was formed, with headquarters at Cleveland, embracing all the principal factories, and the price of carbons advanced from \$10 and \$12 per thousand to \$20 and \$25. As these carbons are chiefly made from the coke of petroleum and naphtha, it has been proposed by a syndicate, composed of some of the electric light companies, to take the entire petroleum-coke product of the Standard Oil company and manufacture their own carbons. This product is 20,000 tons per year, and it is reported that it has been offered to the syndicate at \$8 per ton, and that the offer will be accepted as soon as the various parties interested can signify their assent, and that the new factory will be located in New York city.

It seems that \$20 and \$25 per single thousand is not considered an unreasonable price for good carbons, but the Cleveland combination would make no wholesale rates to large consumers—charging them just the same as those who bought by the single thousand, and this has been one chief cause of dissatisfaction. As the Standard Oil company seems to be the principal producer of the coke, it is thought that the new arrangement will give the syndicate virtual control of the market, and leave the Cleveland combination and those depending on it out in the cold.—*Western Electrician*.

## NONSENSE.

THE MAN WITH THE FLAIL.—It carried the beholder back to thirty years ago, when the thrashing-machine was heard only at rare intervals, and the honest farmer spread his golden stalks on the clean barn floor and flailed away with such tempered blows that not a kernel was broken. The man who had it sat down on one of the benches in the West Circus Park. The rare sight of such an article halted every pedestrian, and the man had to keep explaining over and over: "Well, I'll have some beans to shell this fall, and I kinder thought 'twould be easier to flail 'em out. The hardware man told me he had to send to Vermont for it." Pretty soon along came a grayheaded alderman, and when he saw that flail he looked ten years younger all at once. "I handled that for over ten years," he said, as he picked it up and spit on his hands: "seems like old times to get hold of this hickory again." He stepped out one side to give the crowd an exhibition on the grass, and his success was great. At the second blow the flail end hesitated in mid-air, wobbled about, and finally came down with a whack on the patriot's head, making him see more stars than a winter's night ever brought out. He dropped the weapon with the remark that he was already ten minutes late in keeping an appointment, and he was rubbing his skull as far down the street as he could be

seen. The next to try it was one who got off a passing car under the idea that a dog-fight was in progress. "A flail? Ha! ha! Why, I haven't seen a flail since I was married," he chuckled, as he reached for it. "I presume I have flailed a thousand bushels of wheat in my time. You boys stand back there." The boys retreated, and the man lifted the flail on high and patted the grass in a vigorous manner. "Yes, my stint used to be twenty bushels a day," he continued, "and though I do say it myself, I—" something happened. He dropped the flail, seized his jaw, and danced off as if he had springs under him, and although a dozen voices asked what hit him, he refused to tell. By-and-by a third man came sailing along, and when he saw the flail he remarked that his father had used one like it nearly all his life, and was called the smartest flailer in New Hampshire. "Can't you use it?" inquired one of the crowd. "Why, of course. If you boys want to see how our fathers got their wheat to mill, I'll give you a little exhibition. Here, Bob, hold my hat." He buttoned his coat, moistened his hands, and began work. The first blow nearly broke a man's knee; the second cracked against a boy's elbow; and at the third the flailer grabbed the top of his head and sat down with a subdued look in the corners of his mouth. "Well, I guess I'll be jogging along," said the owner of the flail, as he rose up. "It's all in getting the kink of it. A feller who makes twists and wobbles a special study won't get his head broke over twice a day, but a green hand might as well sit down under a brick-kiln durin' a tornader. Day, gentlemen."

A PREACHER TELLS THIS ONE.—"Yes, I'm from Dakota," he said meekly, as he got into conversation with a man on an Eastern train.

"Ah, is that so? I am thinking of going out there myself to invest in some farming land."

"We have some very fine land."

"So I understand; but are not some of the stories they tell of its fertility exaggerated?"

"Why, my friend, I am sorry to say some of them are downright untruths."

"That's what I thought. Now, what is the most remarkable instance of the fertility of Dakota soil which ever came under your observation?"

"Well, I believe the case of my pump might go at the head of the list."

"What was it?"

"I dug a well about forty feet deep the first season I was there and put down a wooden pump. It happened that it was made out of a small cottonwood log which was a little green, and the soil at the bottom of that well, forty feet from the surface, was so fertile that the pump took root, and it also grew up and branched out, and now while my children play in a swing attached to one of the branches I pump water through the hole which still remains in the trunk."

"Do you tell that for the truth?"

"Why, certainly, sir, I never tell anything else."

"Are you in farming or the real estate business?"

"Why, I'm engaged in neither, my friend, neither. I'm a preacher. I went out there as a missionary seven years ago, and though my work has been humble, I trust it has had a beneficial influence on our people."—*Dakota Bell*.

## UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

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For estimates for advertising, address the UNITED STATES MILLER.

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MILWAUKEE, AUGUST, 1887.

*We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.*

MINNEAPOLIS and St. Louis mills are running nearly full capacity.

A CONSIDERABLE number of good modern mills will be built on the Pacific Slope during the year 1887.

If the Millers' National Association does not amount to anything, why does the editor of the *Millstone* squirm and twist so about it? This we ask and "nothing more."

THE California wheat corner has collapsed, but at present writing (Aug. 4.) no failures are announced, and it is believed that \$60,000 will cover the heaviest loss of any one firm.

AMERICAN manufacturers of flour-mill machinery are, we think, losing a good deal of business by not pushing their interests in France. As it now stands England and Germany get the bulk of the trade.

THE bureau of statistics reports that the exports of this country for the year ending May 31 were valued at \$724,500,000, against \$672,100,000 in 1885-6, and the imports \$685,342,000 and \$630,539,000, respectively.

THE Hartford Steam Boiler Inspection and Ins. Co. has outstanding policies on 23,000 steam boilers, only one of which has it met with a loss since the beginning of the present year. The fact demonstrates the skill and thoroughness of the work of inspection.

MILLERS owning horses (what miller does not own horses), will find a truly valuable remedy in Campbell's Horse Foot Oil, advertised on another page. A can of it should be in every stable. We know its value from experience and do not hesitate to pronounce it good.

WE have received Vol. 1, No. 1, of *The Milling Sphere*, St. Louis, Mo. It is published by Donan & Co., and F. M. Tatlow is the editor. The first number is a very good one, and no doubt Bro. Tatlow will have his new paper in elegant shape in a short time. Missouri ought to be happy now, as three milling papers are published within her borders.

THE *Mark Lake Express*, an English agricultural and milling journal which has a world-wide reputation, has just removed to modern and commodious quarters at No 1 Clement's Inn, Strand, London, W. C. Correspondents will please note this in all future communications.

THE *FARMER*, an excellent agricultural paper published weekly at St. Paul, Minn., in its issue of July 21, printed an elaborate article with illustrations, on the subject of the chinch-bug. The article describes its life-history, habits, natural enemies and best method of getting rid of them.

ENGLAND levies more customs duties on imports than any other country in Europe. In the last year for which the figures were complete, the amount of duties collected were as follows: Austro-Hungary, \$12,750; Russian empire, \$44,435; German empire, \$46,745; France, \$65,480,000, and Great Britain, \$96,050,000.

MILLERS in all parts of the country, and especially in the West, are studying up the value of bran for the purpose of fattening stock, and it seems to be an assured fact that there will in the near future be a strong demand at fair prices for all the bran we can make.

BRITISH millers are making a loud cry for protective tariff so far as flour is concerned. Those interested in other trades don't like this selfish movement on the part of millers to restrict protection to their industry alone, and threaten to oppose it unless the protective tariff shall apply to all interests. The general consuming British public, however, are still willing to eat American bread and meat so long as they can get it cheaper than it can be produced at home.

THE Secretary of War has caused the *Northwestern Miller* to be placed upon the list of official papers for the War Department, authorized to publish advertising for the department.—*Northwestern Miller*.

WE congratulate the *Northwestern Miller* in getting on the list, but at the same time beg leave to remark that the UNITED STATES MILLER has been on the Government advertising list for over eight years. We confess, however, that we are but little richer so far on account of Government patronage.

THE Treasury Department has notified customs officials of the decision of the Supreme Court that grain bags manufactured in the United States, when exported filled with American products, may be returned free of duty, notwithstanding that such bags were manufactured from foreign materials and that at the time of the exportation the manufacturers were paid a drawback for duties on such materials. Collectors are instructed to apply this decision to all future importations of returned grain bags and other coverings of reputed merchandise which may be the manufacture of the United States.

THE losses by fire in the United States and Canada during May last are estimated by the *New York Commercial Bulletin* to amount to

\$11,489,500, as against \$7,000,000 in the corresponding month of 1886, and an average of \$8,000,000 in May during the past twelve years. The number of fires of \$10,000 and over was 183, or 35 more than in May last year. The losses for the first five months of 1887 have been \$52,739,500 as against \$44,150,000 during the like period of 1886.

MESSRS. EDW. P. ALLIS & Co. have favored us with copies of their new catalogue of pulleys, hangers, gearing, etc., thoroughly illustrated. They have also issued an order book for bolting and wire cloth, which is very convenient for millers when desiring to order cloth. These books will be sent to millers on application.

MILLERS desiring to secure a first class book on milling can do no better than to send for a copy of "Gibson's Gradual Reduction Milling." Price, \$3.00. Address UNITED STATES MILLER, Milwaukee, Wis.

## THE MINNEAPOLIS INDUSTRIAL EXPOSITION.

It is said that one hundred and seventy-three exhibits in the Minneapolis Exposition will consist of manufacturing processes, or of machinery of an interesting nature, in motion. Manufacturing of almost every kind will be represented, and many processes that have never been seen in the West: These are the manufacture of gold pens and pencils, manufacture of decorated and enameled tinware, manufacture of mother-of-pearl ornaments, weaving of oriental rugs, coining of medals, spinning of brass dishes, etc.

The art collection of the Minneapolis Industrial Exposition will include works of over two hundred of the most eminent American painters: The Morans, Smilies, William and James M. Hart, Boughton, Champeney, Bierstadt, Bradford, Hamilton, Beard, Bricher, DeHaas, Patterson, Brown, Nicoll, Morgan, Lyman and a hundred more of equal prominence will be represented by their best and latest work. Those who have been favored with a preliminary catalogue state that no such collection of American art has ever been shown in the country. Despite the unequalled excellence of this exhibit, the price of admission will remain the same; only ten cents admits to all the fourteen galleries and the sculpture hall with its balconies, each of which will contain something of an artistic nature, which will be entirely unique and not to be found elsewhere.

BRADSTREET'S says: The practicability of making Buffalo the great grain storage point of the country has been discussed by the newspapers of that city. It is stated that the only essentials lacking are greatly increased storage room and cheap rates of storage. Of late a tendency has been noticeable to furnish the facilities. Seven new elevators have either been lately opened or are in process of construction. A rate for winter storage has been fixed which is said to be much lower than at any other storage point. Buffalo has now forty-three elevators, with a combined capacity of 14,000,000 bushels. Double this capacity is really necessary if that city is to become the great storage point. For winter storage its posi-



tion at the foot of the lakes and its proximity to New York and Philadelphia are among the advantages claimed. Transportation facilities there are ample. The possibility of making Buffalo an iron manufacturing center is also being discussed. Cleveland, Chicago and Milwaukee are prominent in that direction, and use Lake Superior ores. The coke used comes from Pennsylvania, and much of it passes through Buffalo. The cost of ore at Buffalo would, it is said, be little in excess of the cost at the points named, and the cost of coke would be less. Attempts to utilize Niagara river water-power at Buffalo have never been specially satisfactory. A large sum of money is now being raised at Buffalo as a prize for the best system of utilizing Niagara river as a water-power. The sum is expected to amount to \$100,000.

THE corn millers and oat meal millers are endeavoring to "pool their issues," so as to be able to limit production and secure a reasonable profit on their products.

THE following is from a statement issued by the United States Geological Survey in advance of the report on mineral statistics for 1896: Domestic iron consumed, 10,000,000 long tons; value at the mines \$28,000,000. Imported iron ore consumed, 1,039,483 long tons; total iron ore consumed, 11,039,483 long tons. Pig iron made, 5,688,329 long tons, an increase of 1,638,803 tons as compared with 1885; value at furnace, \$95,190,760, or \$30,483,360 more than in 1885. Total spot value of all iron and steel in the first stage of manufacture excluding all duplications, \$142,500,000, an increase of \$49,500,000 as compared with 1885.

AMONGST the great changes in the milling trade during the last two years, not the least remarkable is the great reduction in the price at which millers can obtain complete roller mill plants. The great demand for new plants in 1883-84-85 led, naturally enough to much activity in the business of mill builders, of which the number perhaps exceeded the demand. When that demand had been fairly satisfied, that is say, after some 500 mills had been converted to the roller system, the competition became very severe amongst milling engineers, the result being that prices have been gradually cut down to such a low point that one begins to wonder how it is that the business can be profitable; it is, in fact, no exaggeration to say that the present price of roller mill plants is 25 to 35 per cent. less than five years ago. Thus, millers are now more favorably situated in this respect than they ever were before, and yet orders for complete plants are few and far between—a sure sign of the unremunerative state of the flour milling trade.—*Millers' Gazette (London)*.

## NEWS.

A. J. BROOKS is building a mill at Verbena, Ala.

M. L. DICK is erecting a mill at New Market, Tenn.

H. A. MORRIS is building a mill at Germantown, N. C.

JOHN FLEMING is building a grist mill at Summer-ville, Fla.

ANGLIN & JORDAN are building a mill at Mountain Home, Ark.

THOMAS CHYMES is building a grist mill at Willamston, S. C.

H. C. CARRISON, is putting up a grist mill at Germantown, N. C.

THE Hunt County Farmers' Alliance will build a mill at Greenville, Tex.

BURNED—July 10, M. Amherst's mill at Kalamazoo, Mich. Loss, \$5,000. No insurance.

BURNED—July 13, Charles Frenz's mill, Oakfield, Wis. Loss, \$5,000. Insurance about \$2,500.

BURNED—July 15, J. L. Rix & Bro.'s mill at Cedar Creek, Wis. Loss, \$6,000. Insurance, \$2,900.

BURNED—Robert & Jones' mills, Neosho Rapids, Kans. Loss about \$12,000. Insurance, \$6,000.

THE E. HESS Elevator Co., recently built an elevator of 400,000 bushels capacity in just fourteen days.

BLODGETT & NELSON's mill at Beloit, Wis., was damaged by fire July 5 to the amount of about \$7,000.

W. H. BRUMBERRY is building a saw and grist mill at Camilla, Ga., and E. P. Willis & Co. are building a grist mill at Midland, same state.

THE Crookston Mill Roller Co., Crookston Minn., will soon rebuild their mill recently burned. Another elevator will be built in St. Louis by the Merchants' Elevator Co.

DULUTH papers boast that the shipments from that place for one week were nearly two-thirds as great as the total receipts at Kansas City for one year, although the latter point is considered quite a grain center.

THE Pioneer Oatmeal Mills at La Portage, Man., were closed down July 15. The present machinery and the whole interior of the mill will be renovated and a large amount of additional facilities, including a new engine, will be placed in position.

C. J. KERSHAW & Co., the Chicago Board of Trade firm that went to the wall when the wheat corner collapsed in June, made a statement July 30, showing gross liabilities of \$1,800,000 and assets of \$1,700,000. Of the latter amount, \$1,500,000 is in claims on the Cincinnati parties to the recent wheat deal.

BALKWELL's stone flour mill at Rapid City, Man., continues to hold out against the new roller mill. The *Spectator* of that place says: "This mill continues to do a good business, as a great many farmers prefer stone ground flour to the roller process. Balkwell is putting in some improvements and intends to turn out good work in future.

THE Lisbon (Dak.) Roller Mills are being improved. John Cannons mill went up in smoke at New Athens, O. St. Cloud, Minn., will have a new mill of large capacity. Heavy improvements in the Lisbon Roller Mills, at Lisbon, Dak. New mills are just done or in process of construction: Verbena, Ala.; Willamston, N. C.; Wichita, Tex. Burned, Parker's mill at Onelda, N. Y.

## PUBLICATIONS RECEIVED.

We have received No. 1, Vol. 1, of *The Western Electrician*, published weekly in Chicago for \$2.00 per year. It is a handsome paper, has an efficient corps of writers, and no doubt will be an able exponent of electrical matters.

*Southern Industry* is the title of a monthly paper published at Chattanooga, Tenn. Subscription price \$1.00 per year. It has just reached the end of its first months' existence and presents a healthy appearance, and is deserving of the patronage of Northern manufacturers who intend to extend their business in the South.

THE *St Nicholas* for August opens with a dainty poem by Edith M. Thomas, entitled "Invitation to Echo," which furnishes the subject of the frontispiece. The contents are fresh and varied and profusely illustrated, maintaining the high character of this publication as the most attractive of periodicals for young people. Published by The Century Company, New York.

*Scribner's Magazine* for August contains a further installment of Thackeray's letters with illustrations and reproductions of letters and drawings. These letters are delightful reading and have attracted wide attention both in this country and England to the magazine which had the good fortune to secure them for publication. The other illustrated articles are "The Picturesque Quality of H. Iland," by George

Hitchcock; "A Girl's Life Eighty Years Ago," part II. and conclusion; and "The Instability of the Atmosphere," by Prof. N. S. Shaler. Among the other noteworthy articles of the number are "The Revival of Handicraft," by Jno. F. Weir, and "Realism" and "The Art of Fiction," by Arlo Bates. There are besides a number of poems, short stories, further chapters of Harold Frederick's serial, and the conclusion of Mr. Boyesen's story "A Perilous Inco-into."

THE *Art Amateur* for August contains an attractive figure study in colors by Henry Bacon, one in pencil by Carroll Beckwith, the second of the striking series of large classical decorative figures by Ellen Welby (Pandora), a fine study of lady's slipper, decorations for cup and saucer and a plaque, applique border of bryony, a handsome double-page decorative bird design, and a page of monograms in O, and several other good things. Price, 35 cents. Montague Marks, Publisher, 23 Union Square, New York.

AT the recent meeting of millers at the Crystal Palace, Mr. Stringer, whose acquaintance with the milling properties of the wheats at the disposal of the British miller none can doubt, warned the meeting that they would never be able to compete with the American miller if they used American wheats. This was presumably on account of its price, which is often fictitiously high, owing to the manipulations of "rings," such as that which collapsed a few weeks ago. Many a British miller thinks, on the contrary, that the only way to successfully compete with his formidable American rival is to use the same wheat as the latter, out of which the progressive miller in this country may be credited with the ability of obtaining equally good flour. In Glasgow, for instance, it is a well-known fact that only the flour made from Minnesota, or some equally good wheat, meets with any demand; and it is the occasional dearness of this particular quality of wheat which renders the position of Glasgow millers even worse than that of the London millers, for instance. There are times, however, when American spring wheat is virtually the cheapest, all things considered, in the market; the present moment, for instance, is an example in point. Fine Duluth wheat, for prompt shipment by steamer, is obtainable as low as 32s per 480 lb. c. i. f. for parcels, and No. 2 Chicago spring at 30s5d; compared with 33s6d per 492 lb. for No. 2 Calcutta, 32s for Soft Red Calcutta, 34s6d for No. 1 Bombay, and an average price of 35s6d for English wheat, American spring wheat is now undeniably very cheap, and should be one of the most profitable of wheats. Californian wheat, on the contrary, at 38s to 39s per 500 lb., its present nominal price, is obviously beyond the reach of our millers.—*Millers' Gazette (London)*.

## COME TO MILWAUKEE.

If a hundredth part of the people of these United States knew what a beautiful, healthy city Milwaukee is, our hotels and boarding-houses could not begin to accommodate the number of summer visitors we should have. The attractions to Milwaukee, especially in summer time, are too numerous to mention. The parks, the lake, the drives, the places of public amusement are numerous and offer pleasant recreation to all. Milwaukee has now a population of about 180,000, and is well governed in every respect. Among the notable attractions of the season will be the Industrial Exposition and the State Fair.

Reader, if you have the time and money to spare, you will do well to visit Milwaukee.

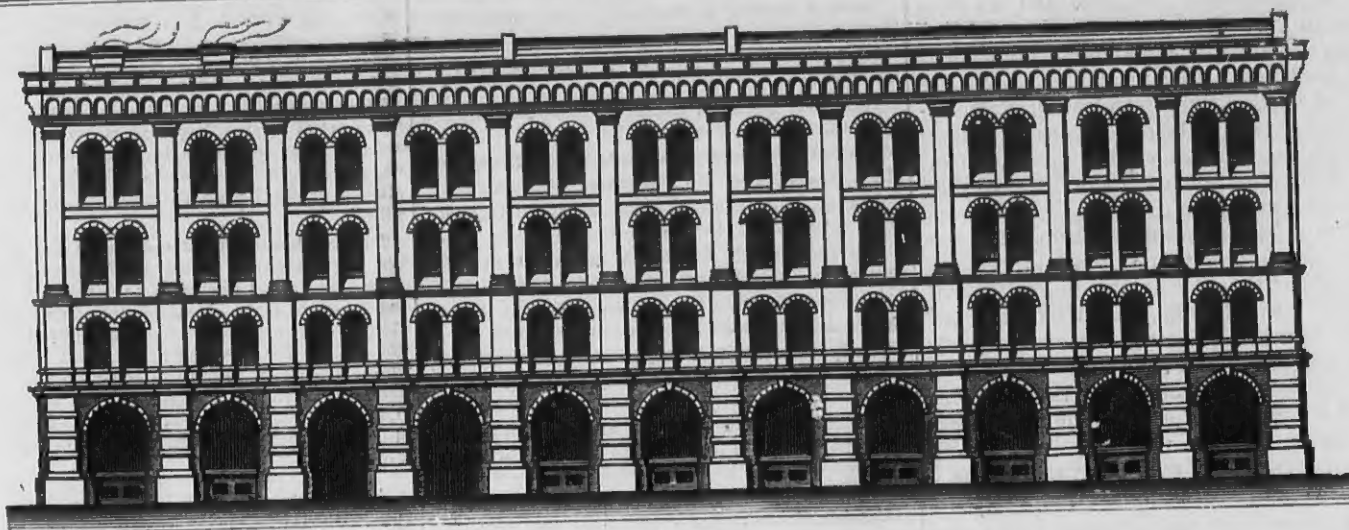


FIG. I.



FIG. II.

**THE NEW RYE MILL OF THE STEAM-MILL STOCK COMPANY AT DRESDEN, GERMANY.**

MACHINERY OUTFIT BY NAGEL & KAEMP, OF HAMBURG.

Of the illustrations herewith Fig. I. represents the front view of the rye mill (containing purifying facilities and offices), Fig. II. a view of the gable side, Fig. III. a sectional view of the purifying department of rye mill, Fig. IV. a cross sectional view of the purifying department, and Fig. V. a cross sectional view of the rye mill.

The building consists of basement and four stories, the last of which, with its exceptional height of six meters, reaches directly the flat cemented wooden roof. The floors rest upon a central row of iron pillars with double iron plates. The upper floor is entirely free and the roof rests upon double thicknesses of timber.

Below the purifying room the machinery room is located, which extends to the second floor, being divided from balance of building in a fire-proof manner by iron beams and intervening arches. The other floors are on an equal height with those of the mill and are supported by iron pillars resting upon stone foundations. The basement of the rye mill proper contains the apparatuses for the aspiration of all break machines.

On the first floor six dismembrators of Nagel & Kaemp patent are placed in a row,

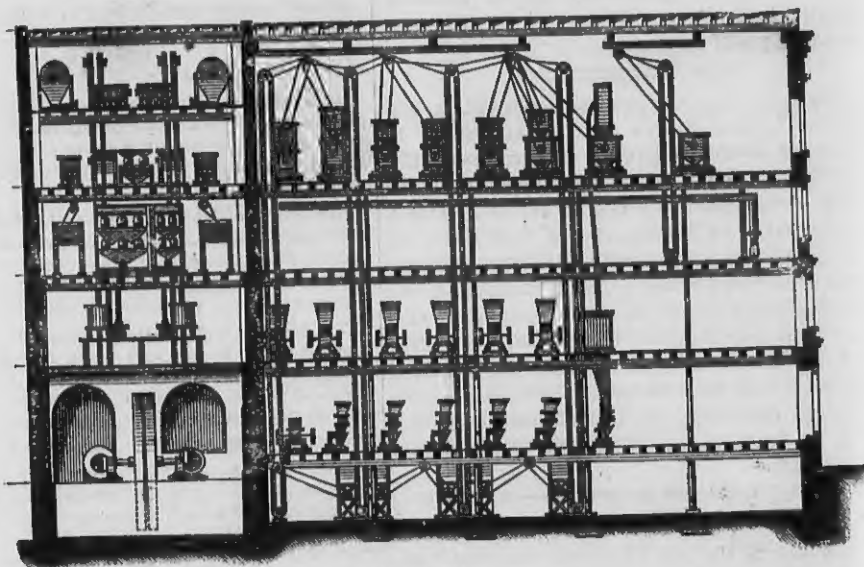


FIG. III.

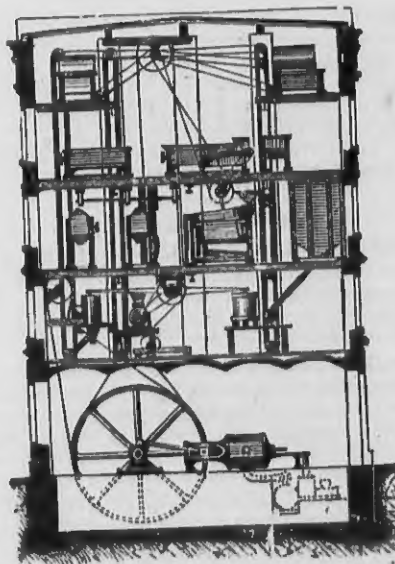


FIG. IV.

all of which are driven from their own pinions; the latter are supplied with tight and loose pulleys, thus setting either machine at rest with ease.

Arranged in a row on the second floor will be found six roller mills of the Nagel & Kaemp patent, driven from the main shaft located along the wall. The third floor is used for sacking flour, and flour hoppers and conveying and elevating apparatuses con-

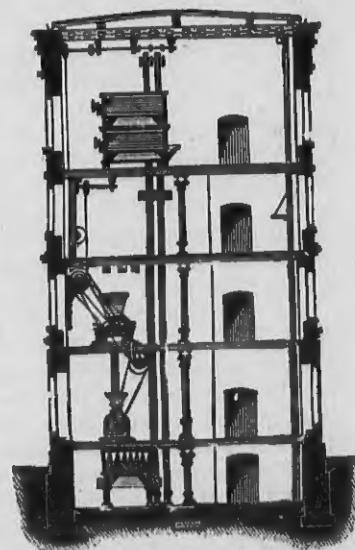


FIG. V.

stitute the only machinery on this floor. A bridge connects this floor with the warehouse, where the flour is stored and from where the shipping is done. On the fourth floor, fourteen centrifugal bolting machines of the Nagel & Kaemp patent are placed, the different sizes being adapted to the various quantities worked in the systems in use.

(FOR GROUND PLAN SEE NEXT PAGE.)



## THE USE AND CARE OF CHAINS.

Mr. Henry Adams, M. I. C. E., at the meeting of the Civil and Mechanical Engineers' Society April 27, London, read a paper on "The Use and Care of Chains for Lifting and Hauling," which excited much interest and discussion.

He divided chains into two classes, those with oval links and those formed of flat bars or plates; the former were again subdivided into "common" and "short linked" chains. The latter being of the most importance received the principal attention; it was pointed out that the links being well rounded, each one acts as a spring when the load surges, and hence their universal adoption for lifting purposes. The dimensions of the links are for the extreme length and breadth  $4\frac{1}{2}$  and  $3\frac{1}{2}$  times respectively the diameter of the iron of which the link is made. In repairing or joining a chain the new link has to be made a little longer, to give room for welding, as there are two others in it instead of one, as in making a new chain. The various modes of welding were then described,

The strength of chains received very full notice; it was shown with crown s. c. iron of b. b. quality, equal to an average tensile stress of 26 tons per square in., an elongation of 15 per cent; and a contraction at point of fracture of 20 per cent., the chain should have a strength of double this because two sides are acting, or one side with a leverage 2 to 1, but there is usually a loss of 25 per cent. from imperfect welding and other causes. Several defects in welding were explained and an interesting collection of links handed round. From a large table of formulae we select the following,  $d$  being the diameter of iron in  $\frac{1}{16}$ ths of an in.; breaking weight in tons short linked crane chain =  $\frac{1}{4}d^2$ ; Admiralty proof strains in tons =  $\frac{1}{8}d^2$ ; safe load for ordinary cranes in cwts. =  $1\frac{1}{2}d^2$ ; safe load for coal cranes in cwts. =  $1\frac{1}{2}d^2$ ; weight in lbs. per fathom =  $d^2$ . The proof test is made upon lengths of 15 fathoms each, the breaking test upon 4 ft.

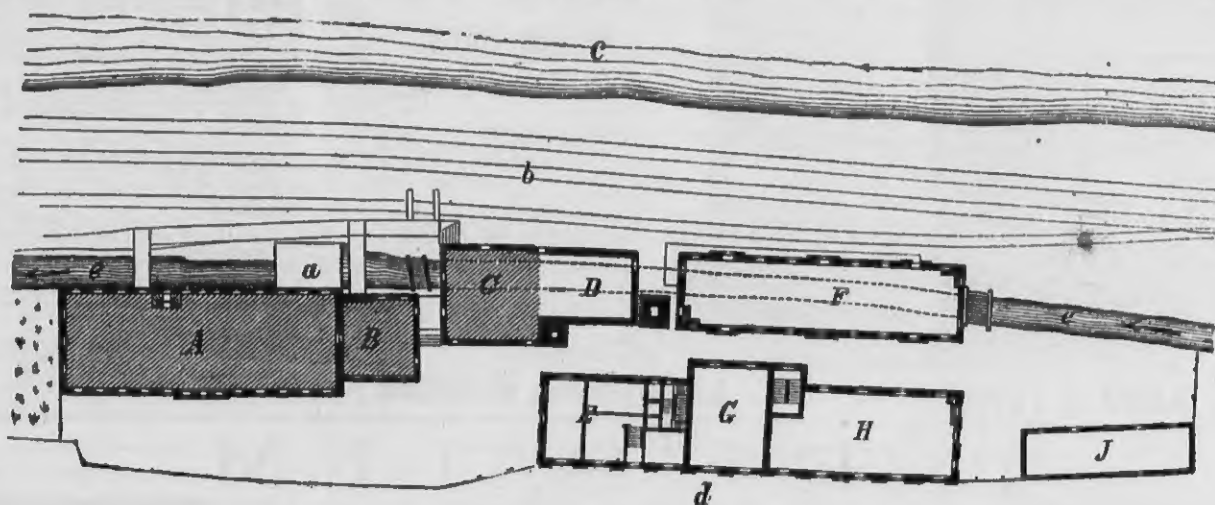
The author then described in detail the system adopted for the care and maintenance of the chains at Messrs. Cory & Son's coal-

the length the chains should be cut and pieced when partially worn, so that when finally discarded each link shall have done its full share of work without overstepping the limits of perfect safety.

## ITEMS OF INTEREST.

**THE RICE INDUSTRY.**—The cultivating and milling of rice in Louisiana gives employment to a large percentage of her population. There are about 900 rice plantations in the state. New Orleans has 12 mills, with capacity of cleaning 275,000 barrels per annum.

**STEAM JACKETING.**—This was the title given by Mr. S. G. Bleasby to a paper read by him at the last meeting of the Junior Engineering Society, in London. The author in his introductory remarks said, that although the steam-engine had been in use for upwards of 100 years, we had even yet but an imperfect acquaintance of its theory. Of late years a few authorities had investigated the matter from a practical standpoint, and had produced results of much interest and value. The chief point of steam-engine



GROUND PLAN OF THE NEW RYE MILL AT DRESDEN, GERMANY.

and the peculiar tendency of some chains to twist while in use. The different sheaves in use according to circumstances were shown upon the diagrams, the diameter in any case being not less than thirty times that of the chain iron. The loose end of the chain should have a swivel either separate or as part of the hook, and all cranes except coal cranes should have counterweights; in these cases, as the tubs have to be pulled from under the hatchway combings, no counterweight is admissible. Several illustrations of chain fastenings were shown and described, and the modern forms of hooks and shackles were contrasted with those thought to be "nice" some years ago. Conveyance sheaves and other supports, chain bones for cylinder ends, and the best position of the machinery for cranes and hoists were described, and reference was made to Mr. Westmacott's patent cupped drum gearing for cranes, capstans and gate engines. Turning chains next came under review, and the various methods of connecting them to the crane. Stud link chains being used only for ships' cables and mooring purposes were passed over with only one remark, that the use of the stud was to prevent the chain getting kinked, and that it added slightly to the strength for a steady pull by keeping the link in shape.

ing establishment, where he has been responsible for chains which have lifted upwards of 15,000,000 tons of coal in the last ten years, and during that period only one fatal accident occurred from a chain breaking, although the machinery is at work day and night, and the men necessarily work under the cranes. The inspection and lubrication are very thorough and each chain will make about 100,000 lifts before it is worn out for lifting purposes; it is then cut up into sling chains, barge moorings &c., as there are still many years of useful life in it. In hotels, warehouses, and large offices much damage is done by the servants sweeping the dust off each floor into the hoistway, cutting the chain like emery. Coal dust is not very detrimental to chains, but coke dust is decidedly bad. Sling and fall chains used in the erection of machinery and buildings are always used dry for various reasons; they should be put through a wood fire and annealed after every large contract, or, say, every two years, and carefully examined by a skilled man before being taken into use again.

In summarizing the points of economy in the maintenance of chains, the author said the testing should be moderate, the annealing frequent, the lubrication thorough, and when the wearing is not uniform throughout

inefficiency — incomplete expansion — continued to exist, as increased expansion entailed such loss by condensation. Greater economy than at present was to be sought in using a cylinder material of far less conductivity for heat than that now in use. From a correct indicator card, and knowing the quantity of feed water used, Mr. Bleasby showed how the existence of cylinder condensation could be proved, and proceeded to explain by figures the improbability of the change of temperature of the cylinder walls taking place through the whole thickness of the metal, owing to the very short time allowed for the change and the slow rate at which the passage of heat occurs. The author referred to waste gas and hot-air jackets, and after showing their inferiority, graphically indicated the beneficial results of steam jacketing. He concluded by observing that considerable economy was attainable from the use of efficient steam jackets, and gave some practical considerations in their design, construction, arrangement and management.

**A CURIOUS FACT.**—Chicago Tribune: It is a well known fact among railroad men that on railroads running north and south the west rails wear out the faster; that five rails will wear out on the west side of the track while three are doing service on the east side.

# Campbell's Horse Foot Remedy



WILL POSITIVELY CURE AND PREVENT  
BRITTLE OR SHELLY FEET, CONTRACTED  
FEET, QUARTER CRACK, CORNS,  
THRUSH OR FOOT-ROT, ETC.

AS A LINIMENT, IT HEALS

Cuts, Wounds, Shoulder-Galls, Scratches. Soreness  
over the Kidneys, Swollen Glands, etc.

PRICE,  $\frac{1}{4}$  Gallon \$1.50; One Gallon \$2.50; Five Gallon  
Can at \$2.35 per Gallon.

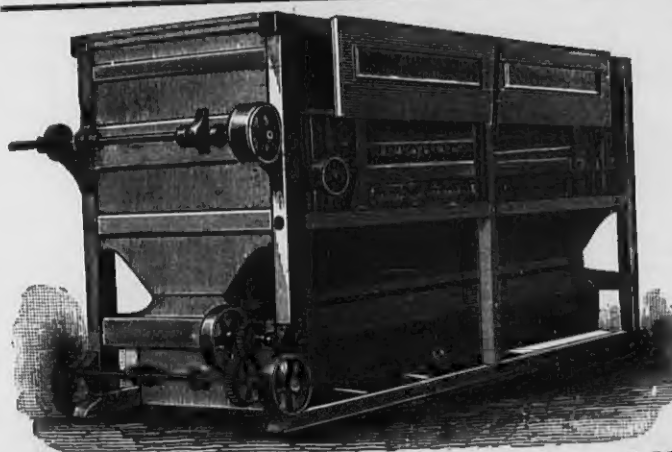
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REFERENCES:—E. D. Bither (driver of Jay-Eye-See) Racine, Wis.; James Foley, chief of Milwaukee Fire Department; L. S. Townsend, Appleton, Wis.; The Livestockmen of the Northwest; A. S. Babcock, Manager Babcock-Drake Transfer Co., St. Paul, Minn.; Noyes Bros. & Cutler, St. Paul, Minn.; M. Zimmerman; Heinrich Brewing Association, Minneapolis, Minn.; and hundreds of others in all parts of the country.



## —THE— Advance Shake FLOUR BOLT.

Better than the Centrifugal or  
Old-Fashioned Bolt in every part  
of the mill.

No forced bolting in this  
machine, but a sliding action of the  
chop which tails the impurities  
over instead of driving them  
through the cloth.

No Machine but can begin to  
equal the work of the ADVANCE.

This is no clap-trap or hoax,  
and if a miller is about to  
build or remodel, it would pay  
him to go a thousand miles to  
see this machine and its work.

Be sure and write for particu-  
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is the original round cornered Elevator Bucket and its shape  
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All buckets of the same shape, though produced by a differ-  
ent process, trespass upon our rights, and render dealers and  
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**AVOID INFRINGEMENTS.**

All legitimate "Salem" Buckets are plainly marked with the word SALEM.

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# MACHINERY FOR SALE CHEAP!

2 24-inch Middlings Mills, almost new.

1 Millstone Dresser, almost new.

8 Pair 48-inch Burr Millstones. New.

1 Pair 9 x 18 Smooth Rolls. New.

1000 Pieces French Burr Millstone Blocks, extra quality.

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## THE PRIZE PAPER.

## FIFTY OF THE BEST POINTS IN THE MANUFACTURE OF FLOUR BY THE MILLSTONE SYSTEM.

From *The Miller*, London.

1. Good stones and good wheat.
2. It is essential for good work that they be of uniform quality throughout; neither porous nor close, but free cutting.
3. For ordinary flat, or finishing grinding, there is nothing much better than the common ten-four dress.
4. For the production of middlings, or high grinding, a greater number of furrows of less width are better.
5. Face.—The face of a millstone is by far the most important "point" in a stone mill. Without a true face it is utterly impossible to do good work.
6. To obtain a good face, a thoroughly correct and reliable staff is necessary. There is nothing equal to the circular staff for correctness.
7. Where the ordinary staff is used great care should be exercised, as it may prove misleading. Keep it true.
8. Never, in staffing a stone, let the staff cross the eye. It should cover only about a fourth of the stone, or just up to the eye-burrs.
9. The grinding face of a stone should never exceed 9 inches, and this should be perfectly flat and smooth (not glazed).
10. Let the bedstone be really flat; but the runner should taper from the grinding face to the eye, for which use a short prepared staff.
11. Do not overdress your stones, but get them true and smooth by all means. Many a stone is spoiled by too much cracking. Be discreet.
12. Be particular about your furrows. Avoid sharp, rough fore edges. Inattention to this causes irremediable mischief.
13. It is most essential that stones should be kept sharp and in good face; for this reason they should be dressed at frequent intervals.
14. Running stones too long without dressing is a fruitful cause of bad face and unsatisfactory work.
15. Stones will preserve their work much longer where the driving irons are rigid.
16. Balance.—A correct running balance preserves the faces of stones, as an incorrect one certainly destroys them.
17. They should be balanced first standing, then running; for this purpose there is nothing like the well-known patent balance boxes.
18. Have the diameter of all driving-wheels and pulleys as large as possible, and belts to correspond; this saves power, and prevents excessive strains on shafts and bearings.
19. Next to a true stone face, the most important "point" is wheat—that is, wheat which will suit the stones and yield a strong, white flour.
20. In blending wheats for a standard mixture bear in mind the following qualities—strength, color and flavor.
21. A washer and whizzer for dirty wheat of the Indian type, and a damping worm for dry brittle wheat, are great acquisitions and profitable investments.
22. The conditions and adaptability of wheat for stones is an important matter.

Allowing the mixture to lie in a bin for a time will greatly improve it.

23. For suitability there is nothing equal to winter wheat, or our own native wheat when in good condition. The milder Russian wheat will supply strength.

24. Aim at a good standard of flour, and, when found satisfactory, maintain it. This can be done only by great attention to wheat.

25. Clean your wheat thoroughly of all extraneous matter by a proper arrangement of machines. Too much attention cannot be paid to this "point."

26. Let there be no waste in any part of the mill. "Do for your master as you would for yourself."

27. It is well to have some simple machine for the treatment of screenings, for the removal of any good wheat which may have got in accidentally. It pays.

28. A separate pair of stones for grinding screenings, etc., and a simple machine for dressing will pay. Their (the screenings') value is enhanced in the offals.

29. Grinding.—A well-dressed, true-faced and correctly-balanced stone will grind cool and free.

30. Cool meal dresses freely; hence true stones require less silk surface than untrue ones.

31. A regular even flow of meal indicates a true stone, and an uneven, intermittent flow an untrue one. The latter is generally hot.

32. A correctly-dressed stone will produce broad bran, the miller's desideratum. Broad bran and white flour go in unison.

33. However, if white, fine flour is desired, it must be finely dressed; and, if fine, a large silk surface is necessary.

34. Remember that length of silk means "length" of flour; and the finer the silk the greater the surface required.

35. Observe, good, properly-milled flour has a uniform appearance. Hard and soft flour mixed indicates bad milling and uneven stones.

36. Observe, also, that the finer flour is ground the whiter it becomes; and if killed by too much pressure, becomes blue-white and worthless.

37. Have no returns of any kind in your mill. Always work forward.

38. If you cannot finish in one operation, grind the unfinished stuff separately, and mix the flour; or, buy more machinery to treat it continuously.

39. Let everything be as automatic as possible. Hand labor produces irregular work.

40. Handle your products only twice, as wheat and flour (and offals).

41. No good stone mill is complete without one or more purifiers.

42. For purification, grade your middlings and arrange the clothing of your purifiers so that the tail sheet is one number coarser than its respective grader number.

43. Dust your middlings well, and properly ventilate your purifier fans. The outlet of stove-chamber should be twice as large as inlet from fans. This will prevent waste.

44. If you have sufficient stones or rolls, grind each size of middlings separately, and, for convenience, dress together.

45. A second, or greater number of purifications, is advisable; and grinding the middlings with rolls is an advantage.

46. If your rolls are belt driven, see that the differential speed is maintained. Too

much pressure will result in more power being required and less work done.

47. Make a practice of examining and testing all the products in the mill at least twice a day. The oftener the better, as trouble, regret and loss will thereby be avoided.

48. Have no unfinished products about the mill. These have a tendency to increase unaccountably, and are great nuisances. "A place for everything, and everything in its place."

49. Re-dressing all the flour will greatly improve its color. Wipers, or sweeper, hung on reels, will keep them clean; they can be lifted off or placed on at will.

50. Bear in mind always that a good article sells itself. Endeavor to give your customers a little more than their money's worth, and you will find it worth the money.

This question is often asked, why the coal fire will be increased in intensity by moistening the mass with water; that it is a fact is evident and without going into a lengthy discussion of the matter, we will state that the water contains Hydrogen, two parts; Oxygen, one part.

Technically speaking, then, no more heat is produced by the action of the water, but it is in the condition to communicate heat; the steam in contact with the incandescent coal is decomposed, the oxygen going to the carbon to form carbonic oxide, leaving the hydrogen of the water free. Now if the carbon is abundant as in firing, hence heat high. The carbon and oxygen is also decomposed, just doubling the volume of CO formed. In short, the water is decomposed by the heat, the hydrogen burns with a pale flame while the combustion is increased by the addition of the oxygen thus set free.

It will be seen from the foregoing, that to obtain the best results, the water must be added while the fuel is in a glowing condition, and if the addition is made before the fires are started, the fuel is merely wet, no decomposition has ensued, hence combustion is increased. The same rule applies, but in a modified force, to wood as fuel, but in this instance, the wood having more moisture than that of crystallization, while coal has much less; of course this must be driven off by the heat units represented in the wood (and wood, particularly across the grain being among the poorest conductors known) must not be considered as decomposed as carbon is not sufficiently in the majority.—*A Chemist.*

An eminent civil engineer of St. Louis expresses the opinion that electricity will supplant gas for illuminating purposes within the next decade, and that the pipes now used for the transmission of illuminating gas will, during that time, be given up to the uses of fuel gas. The present illuminating gas companies will go into the business of manufacturing fuel gas, and will not be ruined by the advance of electricity. For fuel, gas will have to be manufactured. Natural gas will not supply the demand. The natural gas wells are becoming exhausted, and they cannot be relied upon for a steady supply. Everywhere one has been opened it has been drained in a little while. Those around Pittsburgh will last longest, but they will refuse to flow, too, after some time, and then coal will have to furnish the gas.

**THE FALL OF MME. EEF.**—A friend clipped the following from a newspaper twenty years ago, and submits it for republication as about the most reasonable theory extant of Eve's temptation that has ever been written:

M. Adam was all alone in ze garden. He have plenty for eat and plenty for drink and ees very comfortable, but he 'ave not much clothes.

Von evening he lie down on ze ground for take a nap. In ze morning he wake viz a pain in his side.

He say: "O mon Dieu, vat ees ze matter, eh? Ah, Le Diable, ees one rib gone! I shall take un promenade in ze open air. I shall feet bettaire."

He promenade. Mme. Eef she approach. It is ze first lady zat M. Adam have ever met; it ees Mme. Eef's first entree to society. They approach each other and both are very much attract. M. Adam he say: "Madam, shall I 'ave ze plaisair for promenade viz you?"

Mme. Eef raspond: "I shall be most happy," and they walk together.

They promenade under an arbre; un arbre viz ze pretty appel on it; ze appel viz ze red streak.

M. le Serpent he sit up in ze arbre. He 'ave pretty mask all over hees face—look like elegant gentilhomme.

Mme. Eef she see M. le Serpent viz ze pretty mask and ze appel viz ze red streak, and she ees very much attract.

M. le Serpent he say: "Mme. Eef, shall I 'ave ze plaisir for peek you un appel?"

Mme. Eef she reach out her hand for take ze apple.

M. Adam he say: "Hoi! hoi! voila? Vat you do, oh? Do you not know ees prohibit? You must not touch ze appel? If you eat ze appel you shall become like un Dieu—you shall know ze good from ze evil!"

M. le Serpent he take un pinch of snuff. He say: "M. Adam, ees prohibit for you. If you eat ze apple you shall become lik un Dieu—you shall know ze good from ze evil. But Mme. Eef—Mme. Eef—she can not become more of a godless zan she ees now."

And zat finished Mme. Eef. — *Atlanta Constitution.*

**THE CARROT WOULDN'T DO.**—A man sat on a salt barrel on Michigan Grand Avenue yesterday making a great display of eating a carrot. A small colored boy halted in front of him, watched the performance for awhile, and then said:

"My fadder tried dat dodge de odder day."

"What dodge?"

"Tryin' fur to git sympathy, but it didn't work."

"Why?"

"Kase de whisky smells right frew de kar-rut. He's tryin' onions now."—*Detroit Free Press.*

It was spiteful, but spitefulness cannot be legislated out of human nature. "Did you hear dat Mrs. Smith is having her picture painted?" "You don't say! That old thing!" "Yes, indeed; painted in oil." "Well, I never! In oil! If she ever wants to have a good likeness she'll have to be painted in vinegar."

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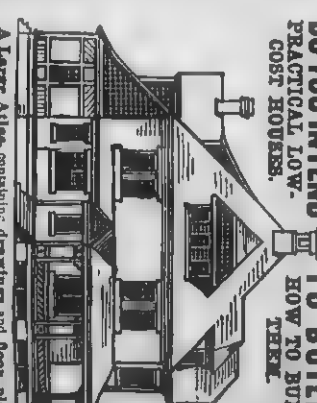
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## RECIPES.

**HOW TO MAKE VIENNA BREAD.**—First and foremost, Vienna bread is made with *patent* flour and compressed yeast. Neither potatoes nor ferment should be used, and in place of water it is best to use only milk, or milk and water. The following is a good method: to every eight pounds of flour take three quarts of milk and water (half-and-half),  $3\frac{1}{2}$  oz. of compressed yeast, and 1 oz. of salt. Mix the warm water first with the milk so as to give a temperature of from 80° to 85° F. Now add enough flour to make a weak sponge, and take care that it is not of greater consistency than batter. Crumble the yeast and mix it well in. Let the sponge stand for about three-quarters of an hour. Now add in the remaining flour slowly and also the salt. The next thing is to thoroughly knead the dough, and set it to ferment for quite two and a half hours. It is best to use the finest spring American patent. By introducing a jet of steam into the oven, the bread is nicely glazed.

**TO UNITE IRON AND RUBBER.**—A correspondent of the *Scientific American* says that rubber may be fastened to iron by means of a paint composed of powdered shellac steeped in about ten times its weight of concentrated ammonia. It should be allowed to stand three or four weeks before being used. He says he has tried it.

**DEATH TO RATS.**—A German milling paper says that no rat can resist eating "brick stone" cheese (Backstein Kase) smeared with brimstone.

**ADMITTING** that Hungarian millers are the most skillful in the world, of what avail is their extra skill in making and holding profitable markets? Allowing that Hungarian wheat possesses some superior qualities not equaled by any other, and that Hungarian processes of milling are refined and multiplied above all other processes, it yet remains true that American millers convert American wheat into flour that answers the highest demands of the greatest number of consumers. While Hungarian millers are losing their markets, the American millers are gaining new ones and holding old ones. Less refinement might materially help Hungarian millers.

**SPAIN** will not impose further cereal import taxes. Recently a proposition to increase grain duties was voted down by 89 to 20. The present rates are \$1.49 on flour, 31 cents a bushel on wheat, 16 cents a bushel on corn, 9 cents a bushel on oats, 16 cents a bushel on rye, and 14 cents a bushel on barley.

The "bucket-shop bill" which became a law at the last session of the Missouri legislature is an iron-clad arrangement which will not only shut up all the bucket shops in the state, but will prevent any more trading in options with the Chicago Board of Trade, so it claims. The bucket-shop men naturally feel very sore over the demolition of their business, and will endeavor to revenge themselves by tripping up the brokers and commission men who have worked so hard to get the bill through. The lawyers have been consulted, and give it as their opinion that no orders can be forwarded to Chicago, as the law expressly states that anyone who opens up a business in the state to buy or

sell any commodity, and does not deal in the actual article, is liable. A test case will probably be brought into the courts before long.

The *Miller* (London) says editorially: "We have expressed our belief that American competition is responsible for but a portion of our present position. No, we verily believe that the reigning depression in the milling trade, in other words, the difficulty of selling flour, is largely due, with the exception of such ports as London and Glasgow, and a part of the South of Ireland, to the stress of home competition. Such a result is, after all, only natural. The last few years have been spent by a large number of British millers in refitting their mills. This work of refitting has almost always been accompanied by an increase in capacity, and now the result of this enormous increase in the milling power of England is beginning to be apparent. This evil will in time cure itself, but we think that the imposition of anything like prohibitory duties on foreign manufactured flour would not have any effect in abating it."

THERE is a growing tendency to abandon the hydraulic test as an independent, self-sufficient means of determining the true condition of a boiler after having been in service, and all indications now point to the fact that the necessity of something more reliable is being generally appreciated. The advice so freely given that the hydraulic test should be cautiously and judiciously applied, and that its results should not be accepted with implicit confidence, is thus bearing fruit, even if only after years of experience. Those who have unbounded faith in the test and do not hesitate to deny the necessity of any further inspection, are happily decreasing in number from year to year, making room for men with a broader knowledge of the requirements of steam-boiler inspection and preservation. The hydraulic test has had ample opportunity of demonstrating its good and evil features, and it is only natural that a decline should be experienced in its popularity.—*Power*, April, 1887.

A STRIKING instance of labor-saving machinery is that which makes tin cans. One of the machines used in the process solders the longitudinal seams of the cans at the rate of fifty a minute, the cans rushing along in a continuous stream; of course a drop or two of solder is left on the can. The drop on the outside is easily wiped off, but is not so easy to secure the drop left on the inside. An ingenious workman has patented an arrangement for wiping the inside of the can without stopping the machinery. Result, several thousand dollars in royalties in his own pocket and saving of \$15 worth of solder

per day to the firm that uses it. Thirty thousand cans is a days work for this machine.

**NOT A GEORGE-IAN.**—*Chicago Tribune*: Arizona Road Agent—Hands up, in this stage coach! Lively now!

[Intermission of a few moments, during which considerable business is transacted.]

Sarcastic Passenger—You've got about everything except our boots. Hadn't you better go through us again?

Road Agent—I never take up two collections from one crowd. I'm no anti-poverty society.

BYSTANDER—"Doctor, what do you think of this man's injuries?" Doctor—"Humph! Two of them are undoubtedly fatal, but as for the rest of them time alone can tell."

"HELLO, Shorty," said a gamin, looking at a man of about five feet two, in front of the postoffice.

"Don't call me Shorty, you little cuss," answered the man of low stature; "if you do I'll warm your jacket."

"Ain't yer name Shorty?" replied the kid.

"No, it ain't Shorty," said the man.

"Den don't answer an' get mad when somebody yells shorty if yer name ain't Shorty. I was talkin' to Shorty. If yer ain't the man I was talkin' ter what's the matter wid yer?" said the youngster.

THE editor of the *Chicago News* is a pretty cunning man, but he slips up once in a while. He took a walk around Springfield one day recently. A buxom young lady, holding a baby in her arms, was leaning over the gate in front of a large, fine-looking residence.

"What a lovely child," exclaimed the observing journalist; "pray, may I kiss it?"

"Certainly," said the buxom young lady, and the Chicago man gave the baby a smack that made it put out its under lip and wrinkle its red face all up for a howl.

"That's as fine a child as I ever saw, madam! I'll warrant you it's the picture of its father!" said the editor. "In fact the child interests me so much that I'd like to have its father call on me at the hotel." With this he handed out a card.

"Sakes alive sir!" cried the buxom young lady, "it hain't got no father; this is a orphan asylum.—*Chicago paper*."

"HERE, porter," cried a distinguished victim of the interstate commerce law, who was traveling on a Southern railroad, "bring me a bottle of ale." "Can't do it, sah, we's passin' through a prohibition county. You'll have to wait about fifteen minutes."—*Burlington Free Press*.

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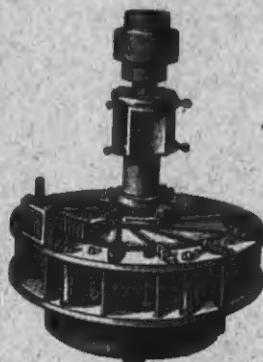
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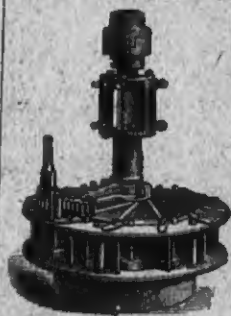
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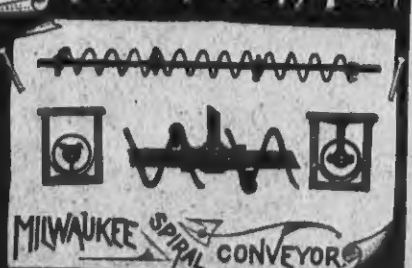
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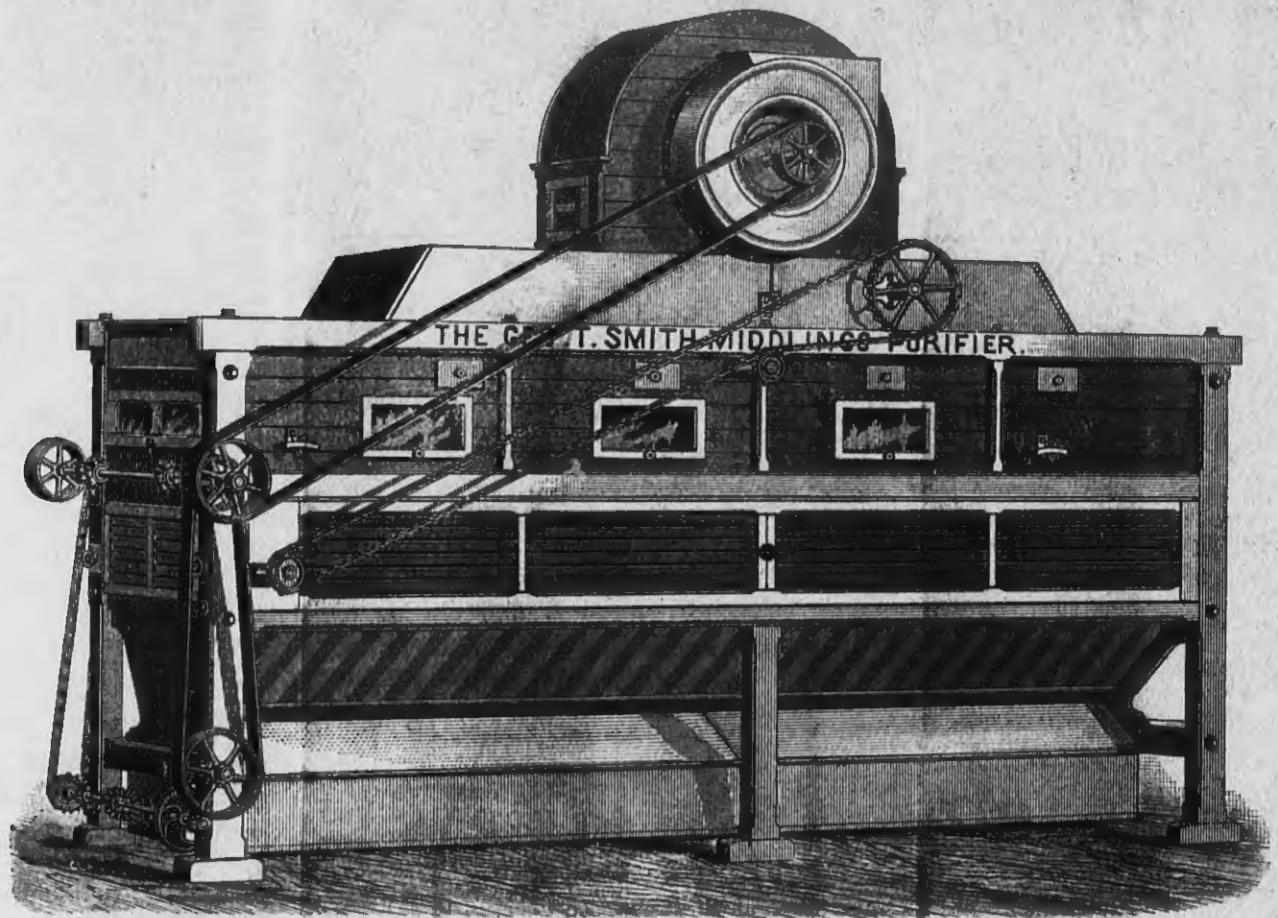


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